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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/876,742	06/07/2001	Toshiyuki Miyauchi	450100-03274	1867

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NEW YORK, NY 10151

EXAMINER

TORRES, JOSEPH D

ART UNIT	PAPER NUMBER
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2133

DATE MAILED: 02/11/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/876,742

Applicant(s)

MIYAUCHI ET AL.

Examiner

Joseph D. Torres

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-48 is/are rejected.
- 7) ☒ Claim(s) 1-48 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to because Figure 8 in the Applicant's disclosure should be labeled as Prior Art. The Examiner has provided teaching references, Wicker (Stephen B. Wicker, "Error Control Systems for Digital Communication and Storage", Prentice-Hall, 1995) and Kobayashi (US 4823346 A). Figure 12-18 on page 318 of Wicker teaches the same trellis as in Figure 8 of the Applicant's disclosure (Note: Figure 12-18 on page 318 of Wicker accompanied with the encoder state diagram as in Figure 11-4 on page 273 of Wicker provide all of the information required to generate the standard Prior Art trellis diagram of Figure 8 in the Applicant's disclosure). Likewise, Figure 3 in Kobayashi provides an analogous state diagram. Hence Figure 8 of the Applicant's disclosure is Prior Art.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: Nowhere in the specification does the Applicant teach, "a soft-input value encoded with a trellis" (recited in claims 1 and 25) nor is it clear what the Applicant intends by the language (the Applicant argues that the previously quoted phrase of claim 1 in Amendment A of

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Paper No. 6 finds support in Figure 8 of the Applicant's disclosure). The Examiner would like to point out that the Trellis in Figure 8 of the Applicant's disclosure is a Prior Art method used for assigning **hard values** to information bits during convolutional encoding and cannot provide support for "a **soft-input value** encoded with a trellis" [Emphasis Added]. Hence the Applicant has introduced New Matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Appropriate correction is required.

Claim Objections

3. Claims 1-48 are objected to because of the following informalities:

- Claim 1 recites, "a decoder" in the preamble, hence it is not clear to what the invention is directed. The Examiner suggests: --a maximum likelihood decoder--.
- Claim 25 recites, "a decoding method" in the preamble, hence it is not clear to what the invention is directed. The Examiner suggests: --a decoding method for a maximum likelihood decoder--.
- Claims 2-24 depend from claim 1, hence inherit the deficiencies of claim 1.
- Claims 26-48 depend from claim 25, hence inherit the deficiencies of claim 25.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-48 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Nowhere in the specification does the Applicant teach, "a soft-input value encoded with a trellis" nor is it clear what the Applicant intends by the language (the Applicant argues that the previously quoted phrase of claim 1 in Amendment A of Paper No. 6 finds support in Figure 8 of the Applicant's disclosure). The Examiner would like to point out that the Trellis in Figure 8 of the Applicant's disclosure is a Prior Art method used for assigning **hard values** to information bits during convolutional encoding and cannot provide support for "a **soft-input value** encoded with a trellis" [Emphasis Added]. Hence the Applicant has introduced New Matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 2-24 depend from claim 1, hence inherit the deficiencies of claim 1.

Claim 25 recites similar language.

Claims 26-48 depend from claim 25, hence inherit the deficiencies of claim 25.

5. Claims 1-48 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Nowhere in the specification does the Applicant teach, "a soft-input value encoded with a trellis" nor is it clear what the Applicant intends by the language (the Applicant argues that the previously quoted phrase of claim 1 in Amendment A of Paper No. 6 finds support in Figure 8 of the Applicant's disclosure). The Examiner would like to point out that the Trellis in Figure 8 of the Applicant's disclosure is a Prior Art method used for assigning **hard values** to information bits during convolutional encoding and cannot provide support for "a **soft-input value** encoded with a trellis" [Emphasis Added]. Hence the Applicant has introduced New Matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 2-24 depend from claim 1, hence inherit the deficiencies of claim 1.

Claim 25 recites similar language.

Claims 26-48 depend from claim 25, hence inherit the deficiencies of claim 25.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "relatively high probability" in claim 1 is a relative term which renders the claim indefinite. The term "relatively high probability" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim 1 recites the limitation "each decoding state" in line 6. There is insufficient antecedent basis for this limitation in the claim.

Claims 2-24 depend from claim 1, hence inherit the deficiencies of claim 1.

Claim 25 recites similar language.

Claims 26-48 depend from claim 25, hence inherit the deficiencies of claim 25.

Claims 1-48 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. Claim 1 recites, "wherein a log, likelihood of getting to a state in the decoder is determined by a soft-input value encoded with a trellis so as to provide at least three paths for getting to the state". The omitted structural cooperative relationships are: the relationship between a "a state in the decoder" and "a soft-input value encoded with a

trellis".

Claims 2-24 depend from claim 1, hence inherit the deficiencies of claim 1.

Claim 25 recites similar language.

Claims 26-48 depend from claim 25, hence inherit the deficiencies of claim 25.

Response to Arguments

7. Applicant's arguments filed 26 January 2004 have been fully considered but they are not persuasive.

The Applicant contends, "Independent claims 1 and 25, as presented herein, recite decoding system and method for 'providing relatively high likelihood of obtaining at least two paths of getting to each decoding state from at least three paths, and for selecting a maximum likelihood path from said at least two paths, wherein a log likelihood of getting to a state in the decoder is determined by a soft-input value encoded with a trellis so as to provide at least three paths for getting to the state.' Claim 1; claim 25. Figure 8 illustrates the disclosed trellis used for encoding."

The Examiner would like to point out that because of the severe 35 U.S.C. 112 issues with the claim it is not clear what the claim language is alluding to. The Examiner has provided teaching references, Wicker (Stephen B. Wicker, "Error Control Systems for Digital Communication and Storage", Prentice-Hall, 1995) and Kobayashi (US 4823346 A). Figure 12-18 on page 318 of Wicker teaches the same trellis as in Figure 8 of the Applicant's disclosure (Note: Figure 12-18 on page 318 of Wicker accompanied with the

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encoder state diagram as in Figure 11-4 on page 273 of Wicker provide all of the information required to generate the standard Prior Art trellis diagram of Figure 8 in the Applicant's disclosure). Likewise, Figure 3 in Kobayashi provides an analogous state diagram.

The Examiner disagrees with the applicant and maintains all rejections of claims 1-48. All amendments and arguments by the applicant have been considered. It is the Examiner's conclusion that claims 1-48 are not patentably distinct or non-obvious over the prior art of record in view of the references, Van Stralen, Nick Andrew et al. (US 6304996 B1), Benedetto et al. (S. Benedetto, D. Divsalar, G. Montorsi, and F. Pollara, Soft-Output Decoding Algorithms in Iterative Decoding of Turbo Codes, TDA Progress Report 42-124, NASA Code 315-91-20-20-53) and XP-000888685 ("Simplified Log-Map Algorithm", Research Disclosure, Kenneth Mason Publications, Hampshire, GB, No. 421, May 1999, Page 612, ISSN: 0374-4353: Note this publication was provided by the Applicant in US Application 09/875310) as applied in the last office action, Paper No. 5. Therefore, the rejection is maintained.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

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applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-3, 14, 25-27 and 38 are rejected under 35 U.S.C. 102(e) as being anticipated by Van Stralen, Nick Andrew et al. (US 6304996 B1, hereafter referred to as Van Stralen).

See Paper No. 5 for detailed action of prior rejections.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 4, 5, 15-24, 28, 29 and 39-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Stralen, Nick Andrew et al. (US 6304996 B1, hereafter referred to as Van Stralen) in view of Benedetto et al. (S. Benedetto, D. Divsalar, G.

Montorsi, and F. Pollara, Soft-Output Decoding Algorithms in Iterative Decoding of Turbo Codes, TDA Progress Report 42-124, NASA Code 315-91-20-20-53).

See Paper No. 5 for detailed action of prior rejections.

10. Claims 6, 9, 10, 12, 13, 30, 33, 34, 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Stralen, Nick Andrew et al. (US 6304996 B1, hereafter referred to as Van Stralen) and Benedetto et al. (S. Benedetto, D. Divsalar, G. Montorsi, and F. Pollara, Soft-Output Decoding Algorithms in Iterative Decoding of Turbo Codes, TDA Progress Report 42-124, NASA Code 315-91-20-20-53) in view of XP-000888685 ("Simplified Log-Map Algorithm", Research Disclosure, Kenneth Mason Publications, Hampshire, GB, No. 421, May 1999, Page 612, ISSN: 0374-4353: Note this publication was provided by the Applicant in US Application 09/875310).

See Paper No. 5 for detailed action of prior rejections.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

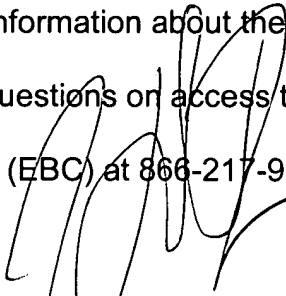
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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (703) 308-7066. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (703) 305-9595. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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